

# Atomic Theory Timeline- PowerPoint Technology Assignment

## Introduction

How can we know about the structure and behavior of atoms, when we can't observe them directly? For thousands of years, philosophers and scientists have sought to understand and describe the basic unit of matter. Our understanding of the atom is still incomplete, but a series of discoveries has provided indirect information about the atom, leading to our current understanding of atomic structure. In the process, several atomic models have been proposed and accepted by the scientific community. For each model, new experimental evidence revealed flaws in the previous theory, and the model of the atom was revised. In this web quest you will investigate the progression of ideas about atomic structure. Later in the course, we will examine the quantum mechanical model of the atom. Your specific objectives for this activity are to:

1. trace the changes in atomic theory through history
  2. identify the scientists who contributed to our current understanding of the atom
  3. describe the experiments that led to revisions of the previous theory
  4. explain how evidence from each new discover led to changes in the model of the atom
- 

## Task

You and your partner will search the Internet sources provided to learn more about the scientists and discoveries that have led to our current knowledge of the structure of the atom.

---

## Process

1. Using your research, construct a timeline as a visual representation of the development of modern atomic theory.
2. Draw the models of the atom proposed by the following scientists or philosophers: Democritus, Aristotle, Dalton, Thomson, Rutherford, Bohr
3. Describe the philosophical positions or experiments performed by the following 10 individuals and explain how their findings contradicted previous models.

Aristotle

Henri Becquerel

Niels Bohr

James Chadwick

Marie & Pierre Curie

John Dalton

Democritus

Robert Millikan

Ernest Rutherford

J.J. Thomson

### Phase 1 - Background Information

The sites listed below will provide basic information about the philosophers, scientists, and the models they proposed.

### Phase 2 - Roles

To expedite your research and encourage sharing of information, each person in your team of three will investigate different people.

## INSTRUCTIONS:

1. Decide which person in your group will research the following set of people:

A. Aristotle, Bohr, Democritus, Curie

B. Dalton, Millikan, Thomson

C. Becquerel, Chadwick, Rutherford

2. Research information on each of your assigned scientists. You may print pages and underline the important information or cut and paste from the webpage into a Word or PowerPoint document.

3. Remember to include the URL of the page you take information from so you can return to it and use it as a citation.

## Use the Links Below for Your Research:

- [Atomic Structure Table of Contents](#)
- [A Look Inside the Atom](#)
- [History of the Atomic Model](#)
- [Atomic Structure Timeline](#)
- [Rutherford Atomic Theory](#)
- [The Atom](#)
- [History of the Atom](#)
- [Ancient Theories of Atoms](#)
- [Atoms and Ions](#)
- [The Bohr Model](#)
- [The Bohr Atom](#)
- [Bohr's Theory of the Hydrogen Atom](#)

## Phase 3 - Reaching Consensus

You will be work in groups of 3, and each person in the group will focus on three or four key players in the atomic timeline.

Read the entire WebQuest.

Refer to your notes from pages F€F€€ in your textbook and use any of the websites cited in this site to find information about listed scientists and their discoveries. You may search other websites or use library resources. (N.B.: Wikipedia.com is not an acceptable source.)

Based on the philosophers/scientists you researched, work with the other members of your group to construct a timeline of discoveries.

Include the following on your timeline:

1. Names of all philosophers/scientists in the table above

2. The year of the scientist's discovery

3. Brief description (1-2 sentences) of the importance of the discovery as it relates to the structure of the atom.

4. On the back of the paper, draw the models of the atom proposed by: Democritus, Aristotle, Dalton, Thomson, Rutherford, and Bohr.

---

## Conclusion

Descriptions of the basic structure of matter began as philosophical ideas and evolved through a series of scientific theories, each of which improved on earlier theories. Each member of your group will be assigned a specific theory, and you will challenge previous theories on the basis of experimental evidence that supports your theory.